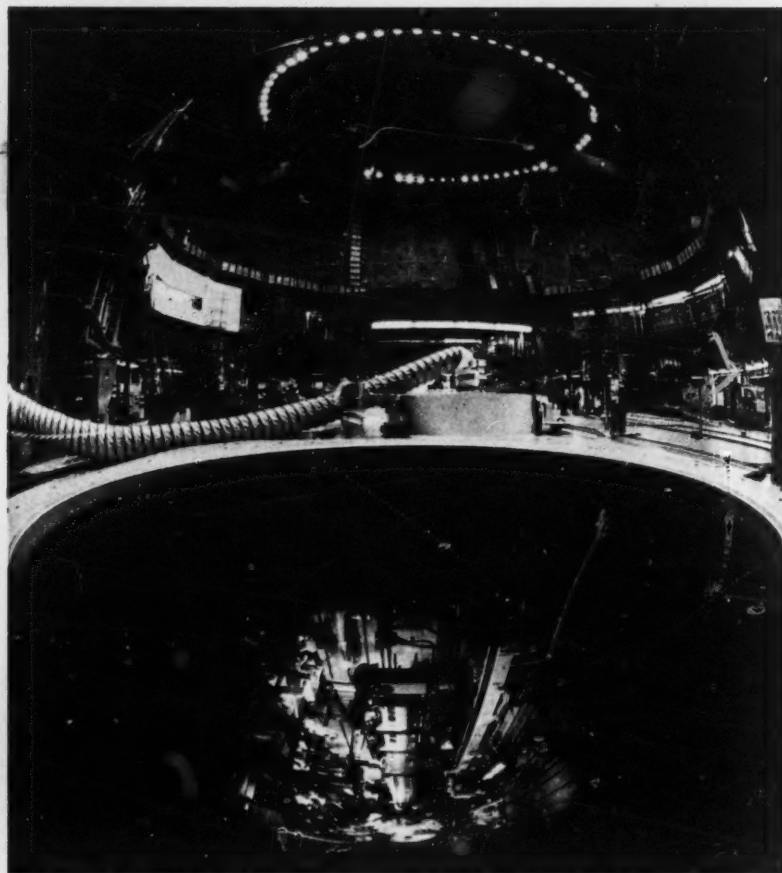


Electric Light & Power

THE NEWS MAGAZINE OF ELECTRIC UTILITY MANAGEMENT AND TECHNOLOGY

A PENNWELL PUBLICATION



Fish-eye lens view of the 400-Mw(th) sodium-cooled Fast Flux Test Facility reactor, which operated more successfully than planned in 1986, shows fuel loading equipment and other apparatus on the reactor's operating floor and, below floor level, a view into the 55-ft vertical interim examination and maintenance cell where test assemblies are initially examined after irradiation. The FFTF achieved an Operational Efficiency Factor of 98 percent in 1986.

FFTF exceeds 1986 operational goals

RICHLAND, WA—The Fast Flux Test Facility at Hanford, WA, exceeded its operational performance goals in 1986. The advanced test reactor achieved an Operational Efficiency Factor of 98 percent, 3 percent better than the 1986 goal set for it.

The Operational Efficiency Factor is a measurement of the time the unit was operating "on mission."

According to FFTF plant manager Charlie Peckipaugh, vice president of Westinghouse Hanford Co., contract operator of the Department of Energy facility, "We had an exceptional year of operation at the FFTF, and reaching our goal of 95 percent is certainly a reflection of the high degree of reliability of the plant."

Continued on page 23

Long-term industry outlook improving, says EIA report

WASHINGTON—Investor-owned electric utilities will experience low growth and declining costs from now until 1995, according to an Energy Information Administration report.

The study says the financial condition of the industry as a whole should improve as a result of smaller construction expenditures.

In the report, entitled *Financial Analysis of Investor-Owned Utilities*, EIA said sales for investor-owned companies are expected to grow at an average of 2.6 percent per year from 1985 to 1995. (See table.)

EIA's forecast was based on a 2.8 percent per year GNP growth rate and an inflation rate of 5.2 percent per year. The group said its GNP prediction is below the assumed growth

rate for the period.

"The fact that the GNP is expected to grow faster than electricity sales is striking," states EIA in the report, "because historically the rate of growth of electricity sales has outstripped the growth in GNP."

Revenues should increase

Revenues should also increase during the period, said the report. However, sales are expected to increase more rapidly. Production expenses per unit of sales are projected by EIA to decline between 1985 and 1995.

According to EIA, the only expense projected to increase is fuel because oil and gas will be in greater demand.

Continued on page 23

New tax laws will result in rate cuts for many utilities

Don Minner
Associate Editor

BARRINGTON, IL—Lowering of the federal corporate tax rate this year and in 1988 has spurred many electric utilities to pass on the savings to customers by lowering their base rates.

Utility corporate income tax rates will be reduced from 45 percent to 40 percent this year, and 34 percent in 1988.

Some utilities are voluntarily asking state commissions for permission to make the reductions, while other companies are feeling pressure from consumer groups and state legislators to follow suit.

For example, New York Gov. Mario Cuomo ordered the state Consumer Protection Board (CPB) to seek \$2.15 billion in rate decreases over the next two years for New York's major electric, gas and telephone electric utilities.

A petition filed by the CPB on behalf of the governor with the state public service commission asks for immediate temporary rate reductions to reflect both the utilities' corporate income tax savings and lower cost of capital, followed by hearings to determine the permanent level of the rate decreases.

Cuomo said the cuts are necessary to reflect 1987 and 1988 savings totaling \$667 million resulting from changes in the federal corporate income tax rate and an additional \$741 million in both years due to sharp decreases in the cost of capital.

"The utilities will receive major windfalls resulting from the Tax Reform Act of 1986," said the governor. "It is essential that the benefits of tax reform be passed on to ratepayers as soon as possible."

Under the new tax laws, Cuomo's office estimates that New York utilities will save approximately \$232 million in 1987 and \$435 million in 1988.

"During the last fifteen years, utility cost increases resulting from rapid inflation rates and abnormally high interest rates were continually passed on directly to ratepayers," stated the governor. "Now that the new federal tax law will result in windfalls to most of the state's utilities, consumers should see immediate benefits in the form of rate reductions. Simple fairness mandates this result."

CPB Executive Director Richard M. Kessel said his group also is asking the PSC to reduce the cost of capital for all utilities due to the declining cost of money.

The agency estimates that 1987 rate reductions would be: Central Hudson Gas & Electric (\$25.1 M); Consolidated Edison (\$154.1 M); LILCO (\$51.0 M); New York State Electric & Gas (\$57.2 M); Niagara Mohawk (\$137.0 M); Orange & Rockland (\$20.1 M); and Rochester Gas & Electric (\$21.3 M).

Edison Electric Institute Vice President of Finance and Regulation Dick Braatz told *EL&P* that the lowering of the corporate tax rate is not the only reason for the increase in

Continued on page 6

DOE asks for 10 percent increase in FY 1988 budget

WASHINGTON—Increases in general science research, clean coal technology, environmental protection and defense activities are part of the U.S. Department of Energy's Fiscal Year 1988 budget request.

DOE said it will ask for \$13.9 billion, up from \$12.6 billion appropriated in FY 1987. With carryover funds and adjustments, the actual spending levels will remain unchanged: \$14.0 billion in 1987 and \$14.1 billion in 1988.

Under Secretary of Energy Joseph F. Salgado said the proposed budget "fully meets the department's obligations to support overall deficit reduction under Gramm-Rudman by holding the line against spending increases and by moving forward with efforts by President Reagan and Energy Secretary John S. Herrington to better target and manage federal dollars."

DOE proposed a 13 percent increase in funding for general energy science research. The budget for the Office of Environment, Health and Safety was increased from \$62 million to \$70 million.

For the clean coal program, DOE asked for a \$350 million program over the next five years, with \$50 million in 1988 and \$100 million in 1989.

Salgado also said DOE will work with Congress and others to divest department activities more appropriately operated by the private sector. DOE will ask Congress to authorize a study of divesting the Southeastern Power Marketing Administration, and he said efforts will continue to sell the Alaska Power Marketing Administration.

DOE will ask Congress to rescind \$256.7 million in the areas of solar (\$13.1 million), university programs (\$68.7 million), conservation R&D (\$18 million), conservation grants (\$112.4 million), and fossil energy (\$44.5 million). The funds were not requested in FY 1987.

Major objectives

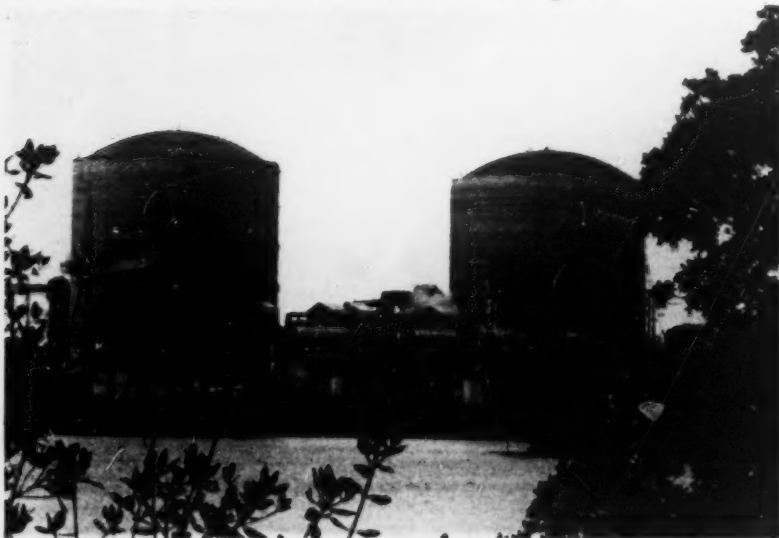
"The major objectives of our budget," said Salgado, "are to provide strong and effective energy and national security leadership for the nation. We will meet the es-

Continued on page 6

'High degree' of safety in radioactive materials transport: ANS

● According to a new policy statement made by the American Nuclear Society, a high degree of public safety is assured by the current regulations for the transportation of radioactive materials. *Radioactive Materials Transport, A Policy Statement of the American Nuclear Society*, points out that the record for transporting radioactive materials has been excellent for the past 30 years, and that more than 5000 spent fuel assemblies have been shipped in this country since 1964 without mishap. ANS also recommends that: 1) States and local jurisdictions should not enact legislation that conflicts with or overlaps federal regulations; 2) The appropriate federal agencies should continue to periodically review existing regulations, updating them where necessary; and 3) Government, private sector and professional/technical society efforts should be increased to provide the public with factual, understandable information on the very low risks involved in transporting the materials.

FP&L's St. Lucie nuclear plant celebrates decade of operation



Florida Power & Light Co.'s St. Lucie nuclear plant has marked ten years of record-setting commercial operation, according to the utility. FP&L said Units 1 and 2, which began operating in 1976 and 1983 respectively, have generated more than 65 billion kWh of electricity. The utility estimates that the two 839-MW units have saved FP&L customers \$1.8 billion in fuel costs since 1976. "Every day these nuclear power plants are operating, FP&L customers save money. Electricity generated by our nuclear units costs about one-third as much as electricity generated by burning oil," said FP&L Group Vice President of Nuclear Energy C.O. Woody.

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A central Illinois utility found itself in a jam when wood poles it had ordered could not be delivered on time. Here's how the problem was solved. T/D	16
What did Bonneville Power do when it needed an insulated data link for the optical transmission of alarms, control commands and analog signals to and from a high voltage site? Read about their solution. T/D	16
A new system can save utilities hundred of thousands of dollars annually by helping them manage their capacitor placement programs. One utility's experience is described. T/D	16
An investigation into the current team skills training practices used by government and industry yields a new training approach. G	25
Find out why many utilities are now using fundamental skills training as the core of their training programs. G	25
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EL&P readers whose responsibilities include both Generation and Transmission/Distribution receive both technology sections. Other readers receive the technology section that applies to their respective area of responsibility. The Generation edition is indicated by a single dot (*) in the upper right corner of page 1; the T/D edition carries two dots (**). All readers receive EL&P's industry news section.

Eastern Utilities Assoc. acquires energy management firm

● Eastern Utilities Associates (EUA) announced that it has acquired Citizens Heat and Power Corp. from Citizens Energy Corp. of Boston. The new subsidiary, renamed EUA Cogenex Corp., provides energy management and cogeneration services to commercial and institutional energy users. "EUA Cogenex gives us an excellent opportunity to supplement and expand EUA's present efforts in the conservation and cogeneration areas..." said EUA Chairman and CEO John F.G. Eichorn, Jr. EUA has appointed former Citizens Heat and Power Executive Vice President Joseph S. Fitzpatrick as president of EUA Cogenex. Fitzpatrick described the new subsidiary's service as a "no-risk situation for our customer. We pay the capital costs of the installation and guarantee savings. We are paid only if what we install really does reduce energy bills."

Niagara Mohawk EDR program helps create/retain 3,000 jobs

● Niagara Mohawk Power Corporation's economic development rate (EDR) program has been credited with helping create or retain 3,100 jobs at 49 companies throughout upstate New York, according to Niagara Mohawk Director of Economic Development Edward J. Kearney, Jr. The utility said the EDR is a three-tier discount offered to existing industrial customers who increase load and to new customers. It is based on the total of actual usage, fuel adjustments and gross revenue taxes. Started more than two years ago, the program was designed to attract new business to the Niagara Mohawk service territory and to encourage the expansion of businesses already there.

NHA to hold national 'future of hydro' conference

● The National Hydropower Association (NHA) said it will sponsor a conference on what the future of hydropower development will be after enactment of the Electric Consumers Protection Act. The conference is scheduled for March 16-17, at the Washington Plaza Hotel in Washington, D.C. Over 25 speakers from investor-owned utilities, public entities, independent developers, major engineering and consulting firms, legal experts and FERC staff will examine the uncertainties created by changes to the law and analyze the implications for original licenses and relicenses, according to NHA. For more information, contact National Hydropower Association, Department C, 1133 21st St., N.W., Suite 500, Washington, D.C. 20036.

NSPE celebrates 37th National Engineers Week

● The National Society of Professional Engineers will celebrate its 37th National Engineers Week on February 22-28. The theme for the week, "Engineers: Turning Ideas Into Reality", is intended to highlight the image of the engineer as an innovator, according to NSPE. In a message to the nation's engineers, President Reagan said, "Our nation will continue to count on your talent and technological skill to help achieve continued domestic prosperity, national security, and a strong competitive position in world markets."

WPSC Kewaunee nuclear plant sets national reliability record

● Wisconsin Public Service Corporation's (WPSC) Kewaunee nuclear power plant recently set a U.S. nuclear industry reliability record, according to the utility. WPSC said the 535-MW pressurized water reactor exceeded 200 continuous days of operation for the fifth time in its 12-year history. "What this means is reliable, low-cost electricity for customers of Wisconsin Public Service," stated WPSC Vice President of Nuclear Power Don Hintz, "We are very proud of our plant staff and of the work they are doing."

AWEA says wind energy still growing despite obstacles

● The American Wind Energy Association (AWEA) reported that California's wind industry continued to grow during 1986 despite the loss of favorable tax benefits and the fall in world oil prices. AWEA estimates that nearly 2,000 wind turbines, worth about \$200 million, were erected in California in 1986. Although that is less than half the number installed during 1985, AWEA considers it a milestone. "Skeptics predicted we would all blow away at the beginning of the year with the loss of the energy tax credits," said AWEA West Coast Spokesman Paul Gipe, "But we're still here, and we're expanding—against even greater odds than we anticipated a year ago."

Solar generating system placed in service on SCE energy grid

● Luz International Ltd. said its third commercial scaled thermal solar electric generating system (SEGS) has been placed in service on Southern California Edison's energy grid. The \$104-million, 30-MW project joins two other SEGS systems that are already in operation. The company said that two more 30-MW systems are scheduled for service this year.

TVA seeks proposals for biomass research

● The Tennessee Valley Authority (TVA) is seeking research proposals from private industry, universities and others for biomass energy development, according to Phillip C. Badger, manager of the TVA's southeastern regional biomass energy program. TVA said the Department of Energy will provide about \$300,000 in funding for the program, which is designed to promote commercialization and use (by the private sector) of biomass fuels—wood, farm crops and certain residues and wastes. "Proposed projects should have broad applicability in the 13 southeastern states," noted Badger. For more information on submitting projects contact Phillip C. Badger, TVA, Muscle Shoals, AL 35660, or phone (205) 386-3086.

Survey says California spends more on conservation

PHOENIX—California spends the most money on energy conservation programs, according to a recent survey from the National Association of Regulatory Utility Commissioners (NARUC).

The group's Energy Conservation Committee released results of its survey of energy conservation, load management and small power producer activities in the fifty states. Individual state responses were developed in the fall of 1984 to the early spring of 1985. Sam Swanson of the New York Public Service Commission served as chairman of the Energy Conservation Subcommittee, which conducted the research.

The report showed that California spent \$390 million on a state-wide basis on end-use efficiency in 1984. Other states that reported total annual utility expenditures were Florida (\$100 million), Illinois (\$50 million), New York (\$40 million), and Wisconsin (\$30 million). See table. NARUC cautions that the figures are not totally comparable.

Expenditures

Measuring utility expenditures on end-use efficiency as a percentage of total revenue, the survey says California (1.95%) and Florida (1.7%) stand out above all others. States reporting the smallest relative expendi-

ture were Iowa (0.03%) and North Dakota (0.05%).

NARUC discovered that almost half of the state public utility commissions have no policies regarding conservation. In a summary of the report, the committee said, "Few states have developed methodologies for determining the cost effectiveness of conservation programs. Many state commissions lack the capability for evaluation. Some state commissions have left the determination in the hands of utilities while other states are evaluating pilot program results."

Generally, pointed out the survey, states just beginning programs start

State	Percentage
California	1.95
Connecticut	0.1 to 0.4
District of Columbia	0.17
Florida	1.7
Iowa	0.03
Maryland	0.5
New Jersey	0.4 to 0.7
New York	0.4
Nevada	0.44
North Dakota	0.05
Oklahoma	0.88
Oregon	0.3
Texas (electric only)	0.3
Virginia	1.0
Wisconsin	0.81

Source: Rick Morgan, District of Columbia Public Service Commission
Gordon Dunn, Iowa Commerce Commission

with the most proven energy savers like residential energy audits.

The subcommittee found that commission orders and decisions regarding conservation and load management programs have evolved on a case-by-case basis. It said few states have issued a specific policy for the purpose of outlining their positions on the programs.

About 26 percent of the survey respondents said they had separate policies for gas and electric conservation expenditures, the primary reason being the difference in gas and electric economics.

Of those responding, most commissions said they base their avoided cost calculations in the short run on energy only, and long run costs on both energy and capacity.

Actual savings

Not many of the states provided data concerning actual savings from conservation programs. California said its 1984 programs saved the equivalent of 9.5 million barrels of oil and reduced peak load by 758 MW. Florida estimates its annual savings because of the programs to be \$1 billion.

"Other states submitted more general responses but supported the fact that conservation programs usually realize substantial energy savings," noted the survey. "Other benefits mentioned were deferred capacity, better management of capacity growth, lower peak demand than forecasted, increased public awareness and improved relations between customers and utilities."

For more information on NARUC's survey, contact Sam Swanson, NARUC Energy Conservation Subcommittee, c/o New York Public Service Commission, Three Empire State Plaza, Albany, NY 12223.

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Inquire R.S. 2

Delaval sold; new name Imo Delaval

LAWRENCEVILLE, NJ—Transamerica Delaval Inc. announced that it has been spun off by Transamerica Corporation to Delaval's shareholders.

At the same time, Delaval Chairman and CEO W.J. Holcombe announced the company's name has been changed to Imo Delaval Inc.

"We see Imo Delaval as more than a new name for an established company," said Holcombe. "For 85 years we have built a tradition of product excellence, innovative designs and quality workmanship."

Long-term industry outlook . . . from page 1

"As a result," noted the report, "electricity prices are expected to decline in real terms at the rate of almost 1 percent per year."

Because existing generating capacity should be able to handle the load, the study predicts construction expenditures to decline approximately 6 percent per year during the period, from \$24 billion in 1985 to \$13 billion in 1995.

Said EIA, "Because construction expenditures largely determine a utility's internal cash flow, the financial position of the industry is ex-

pected to improve noticeably during the period."

Extra cash

EIA believes the electric utility industry will have extra cash during the ten-year study period, allowing it to diversify or buy back invested capital. The report estimates that a net of \$5 billion in external financing will be bought back between 1986 and 1995.

The improving state of the utility industry's financial health may lead to more diversification, according to the report. It said that as long as

ample cash flow is available, diversification activities can be expected to continue.

"Although the general financial condition of the industry is expected to improve," stated EIA, "individual companies may use mergers to solve financial problems."

The study points out that mergers may occur among firms affected by nuclear construction problems. Also, large utilities may buy small ones and small ones will merge.

"However," added EIA, "many mergers among large firms are not expected because of poor economics, regulatory delays, and personal conflicts."

DOE picks manager for Hanford site

PITTSBURGH—Westinghouse Hanford Company, a Westinghouse subsidiary, and the Boeing Company were selected by the U.S. Dept. of Energy in December to manage the Hanford advanced energy research and defense production site in Washington state.

Dr. William M. Jacobi, president of the Westinghouse Hanford, said, "Our primary objective will be to demonstrate the highest standards of safety and performance at Hanford. We are totally committed to safety first—without compromise—and to excellence in all we do."

Phase-in period

The company will work with DOE's Richland, (WA) Operations Office during a phase-in period leading to actual takeover of Hanford operations.

Under the new arrangement, Boeing Computer Services will be the prime subcontractor to Westinghouse Hanford, with responsibility for managing information resources, computer resources, telecommunications, graphics and photographic services.

Activities include

Activities at Hanford include advanced reactor development, civilian waste management, defense materials production, and defense waste management. The site is the location of DOE's Fast Flux Test Facility (FFTF), where research is being conducted to develop liquid metal reactor technology.

FFTF 1986 goals . . . from page 1

During the year, the test reactor recorded a number of other achievements, including:

- A complex series of safety tests in July that involved 29 reactor startups and shutdowns to verify the passive safety of liquid-metal reactors. Part of this testing focused on a new safety feature that automatically cuts off reactor power if the flow of coolant is lost and normal reactor shutdown does not occur. The device, a Gas Expansion Module (GEM), performs the necessary actions to protect the reactor from overheating and safely brings the reactor under control.

New test program

- Start of a new test program to demonstrate reactor core components that could operate up to three times longer than current types of advanced reactor components, greatly reducing refueling needs in future liquid-metal reactors. The test program involves long-term irradiation of test assemblies that include special materials and designs, advanced fabrication techniques and semi-automated production.

- Production of radioactive elements used for medical and commercial purposes, including Gadolinium-153 and Cobalt-60. Gadolinium-153 is a working ingredient in an advanced bone-scanning device that can detect and track the progression of osteoporosis, a crippling brittle-bone disease. Cobalt-60 is used in sterilization of medical products and equipment and also has the potential for food irradiation.

Irradiation tests

- Other irradiation tests involved a variety of fusion materials specimens, candidate materials for space reactor applications and structural materials tests for advanced reactor technology.

PROJECTED FINANCIAL DATA FOR INVESTOR-OWNED
ELECTRIC UTILITIES, 1985, 1990, AND 1995

Components	1985	1990		1995	
		Base Case	High-Economic-Growth Case	Base Case	High-Economic-Growth Case
Revenue (billion dollars)	130.4	147.2	151.2	155.7	166.7
(Annual percent change from 1985)		(2.5)	(3.0)	(1.8)	(2.5)
Sales (billion kilowatthours)	1,890	2,154	2,224	2,454	2,576
(Annual percent change from 1985)		(2.6)	(3.3)	(2.6)	(3.1)
Price (1985 mills per kilowatthour)	68.0	67.6	67.2	62.9	64.1
(Annual percent change from 1985)		(-0.1)	(-0.3)	(-0.8)	(-0.6)
Construction expenditures (billion dollars)	24.3	19.1	20.3	12.9	18.7
(Annual percent change from 1985)		(-4.7)	(-3.5)	(-6.1)	(-2.6)

Source: Financial Analysis of Investor-owned Electric Utilities—Energy Information Administration.

TVA provides job training, retraining to 20,000 workers

KNOXVILLE, TN—The Tennessee Valley Authority estimates that nearly 20,000 people in 400 industries have received job training and re-

training under its Skills and Education Development programs.

According to the utility, this represents over \$400 million a year in potential earnings for these workers.

"TVA's Skills and Education Development programs are driven on the premise that a properly trained and educated labor force is essential for true economic development," stated TVA Program Manager Dennis Mynatt.

The programs include high technology, upgrade craft and industry-specific training as well as education demonstrations.

TVA said its high technology demonstration program covers robotics, microelectronics, computer aided design and manufacturing and tele-

communications.

The authority's upgrade craft training program is designed for journeymen who have the basic skills of their craft, but have been unable to keep up with the latest technological developments.

The education demonstrations include faculty upgrading, computer-managed interactive video, laser videodisc, telecommunications, education refinement, youth career training and curriculum development.

Most important resource

TVA recognizes that its "most important resource [is] its people," stated Mynatt, "Nothing is more important for TVA and the nation than the development of its human resource."

Letters . . . from page 4

have done the same thing.

I tip my hat to Minnesota Power, a company whose forward-thinking is unmistakably presented in the *EL&P* Utility of the Year article, yet is a company that treasures its heritage. Of this we all might take notice.

Peter Kushkowski
IR Consultant
Northeast Utilities
Berlin, CT

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